5000V Graphical Megohmmeter Model 5070

The Model 5070, the latest design in 5000V Megohmmeters, is the most innovative product in its class on the market today. The features and functions incorporated in this product are the results of many years of analyzing how megohmmeters are used in everyday applications. The most advanced technology available has been applied to automate and facilitate the testing process for these applications.

Many features incorporated in the Model 5070 (not found in any other megohmmeter on the market today) include automatic calculation and presentation of the Dielectric Absorption Ratio (DAR), Polarization Index (PI) and Dielectric Discharge (DD). The PI ratio times are also user defined. This new advanced megohmmeter displays the test voltage, insulation resistance and the leakage current during and after the test. Capacitance of the sample and discharge voltage present at the test leads is displayed at the conclusion of the test. The Model 5070 is the only megohmmeter to offer both a graphical plot of the test right on the instrument, as well as a digital presentation of the test results. The Model 5070 also offers the ability to program up to three step voltage profiles, each containing up to five steps.

The Model 5070 is designed with the highest level of safety features built in. The unit is packaged in a rugged insulated case. The Model 5070 incorporates test inhibit capabilities which will not allow test voltages to be generated if a live sample is detected. The test terminals are recessed to ensure operating safety. The test leads, rated for 5000V for both testing and measurement, are the only truly safety approved 5000V leads on the market today. The Model 5070 can be operated from an internal rechargeable battery system or from AC line power.

The Model 5070 offers additional functionality in that an RS-232 port provides the ability to configure the units from a PC and run the test from the PC. Automatic documentation of test conditions and test results eliminates the need for writing down information. Test reports can be generated directly from the instrument to a printer or through the PC using the DataView® graphing and analysis software provided.

The list of features, functions and benefits goes on and on. If you are looking for a truly advanced 5000V Megohmmeter, the AEMC Model 5070 is the best in class and available at an affordable price.

Features

- True Megohmmeter®
- Test voltage combinations of 500V, 1000V, 2500V and 5000V
- Insulation measurements from 30kΩ to 10,000GΩ (10TΩ)
- Selectable and programmable test voltage (40 to 5100V) – three can be stored
- Automatic step voltage with programmable step and dwell times – three profiles can be stored, each with up to five steps
- Programmable temperature compensation of resistance readings
- Large graphic display with five line alphanumeric display and graph of all test results
- Automatic calculation of DAR, PI and DD ratios
- Direct measurement and display of Capacitance and Leakage Current
- Display resistance, test voltage and run time
- Programmable test run times and PI ratio times
- Smooth and Alarm functions
- Automatic test inhibition if live sample (>25V)
- Automatic discharge and display of discharge voltage
- Graphic and digital display of test voltage, resistance and more
- Bright blue electroluminescent backlight
- Programmable test voltage lock-out
- Programmable alarm setting
- Auto power-down when not in use
- AC or DC powered with rechargeable NiMH batteries
- RS-232 interface for direct printing of results (serial or parallel output)
- 128kB memory for storing extensive field test data
- Configure instrument and run tests from a PC
- Includes DataView® Lite software for data storage, analysis and report generation
- Rugged, weatherproof field case
- Designed and built to IEC safety standards
- EN 61010-1, 1000V Cat. III

Applications

- Test insulation on cables, transformers, motors, generators, insulators and wiring installations
- High resistance or absorption tests
- Spot reading tests
- Timed resistance measurements
- Dielectric Absorption Ratio (DAR) and Polarization Index (PI) tests
- Multi-layer insulation testing (Dielectric Discharge)
- Test old or water damaged installations over long time runs
- Motor insulation resistance measurements
- Computer controlled production line testing
- Predictive maintenance by storing results in PC for trend analysis
- User selectable voltage testing to provide application specific testing

Model 5070 performing insulation test on a generator.

Insulation can be subject to slow, gradual degradation over long periods of time, as well as sudden damage. The effects of moisture, dirt, corrosion, chemical penetration and even vibration can cause degradation of insulation. The effects of this degradation can easily be documented by using the automatic Polarization Index test feature standard on all models. Comparing the results over time will provide valuable information for preventative maintenance measures.

Key Functions

Smooth Function – This function is very useful when the readings on the display are unstable and hard to read. It applies a digital filter to the displayed readings to smooth out the presentation. It does not effect the measurement or recording of data.

Alarm Function – Allows for the setting of a low limit resistance value for each test voltage, below which a buzzer will sound alerting you to a problem condition.

Selectable Voltage – Provides the flexibility to program an exact voltage for a specific test to any voltage from 40 to 5100V in 10V increments. The Model 5070 also allows for storage of three different voltage selections.

Test Voltage Lock-out – Gives the flexibility to limit the maximum output test voltage to any value from 40 to 5100V to protect delicate equipment from accidental exposure to excessive test voltages.

Timer Function – Program a test run time from one minute to 50 hours.

Record Function – provides the option to automatically store the data from a timed test at programmable intervals or to store the results of the test manually at the push of a button at the end of the test.

Print Function – Provides a direct print out to a printer of test results in a predefined format.

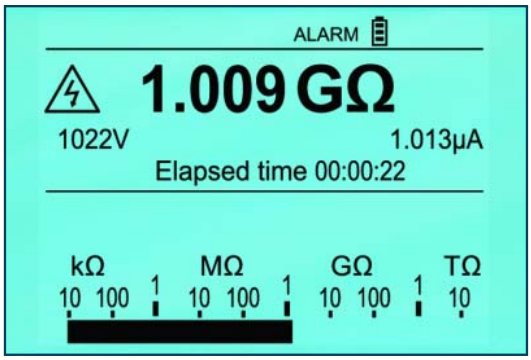
Graph Function – Provides a graphic representation of a time test on the display of the Model 5070 of insulation resistance vs. time. If the step voltage mode is selected, the step voltage is also shown graphically.

Ramp Function – Allows programming of three different ramp test profiles, each containing up to five voltage steps between 40 and 5100V and time per step of up to 10 hours.

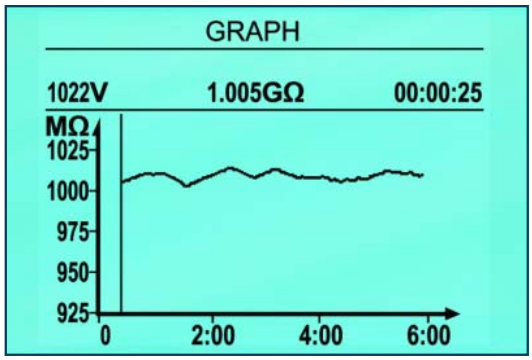
Temperature Function – Provides the ability to display insulation resistance temperature corrected to a specific reference temperature.

Model 5070 checking insulation resistance on feed cables to a three-phase motor.

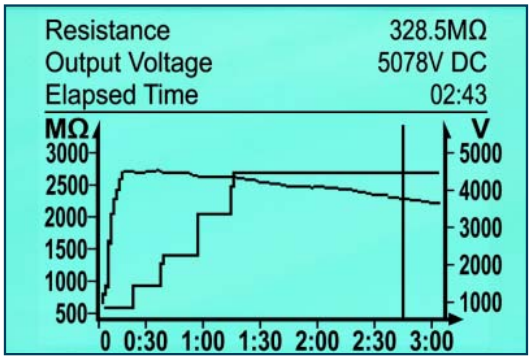
Functional Displays



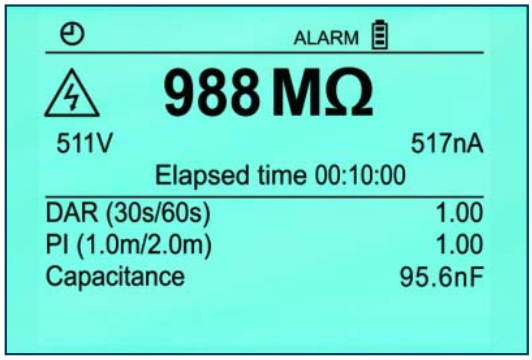
Alphanumeric and analog bargraph displays of Insulation Resistance, Leakage Current and Test Voltage during the test



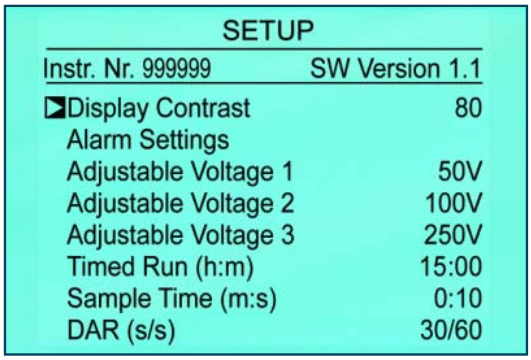
Insulation Resistance measurement graphically displayed at the completion of the test at the push of a button



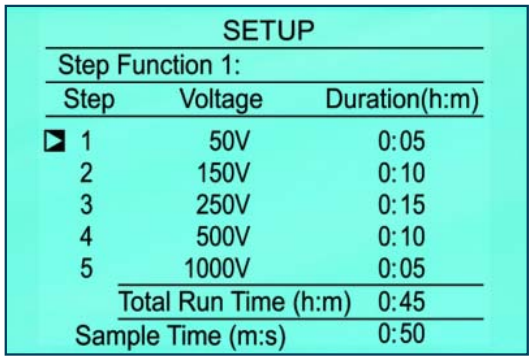
Move the vertical cursor to see Resistance, Output Voltage and Elapsed Time values at the cursor position



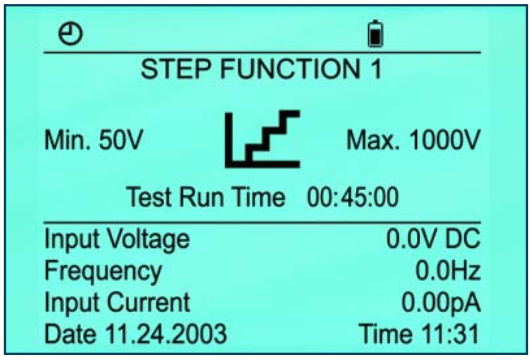
Display of test results at the conclusion of the test



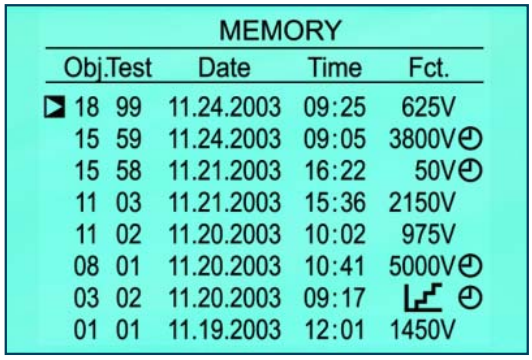
Typical display in Setup mode showing some of the parameters that are user programmable



Typical setup screen for the Step Voltage function



Step Voltage start screen shows start and ending test voltage, test run time and some of the parameters to be monitored



Typical screen showing data recalled from stored memory; each test stored can be reviewed on screen both graphically and alphanumerically.

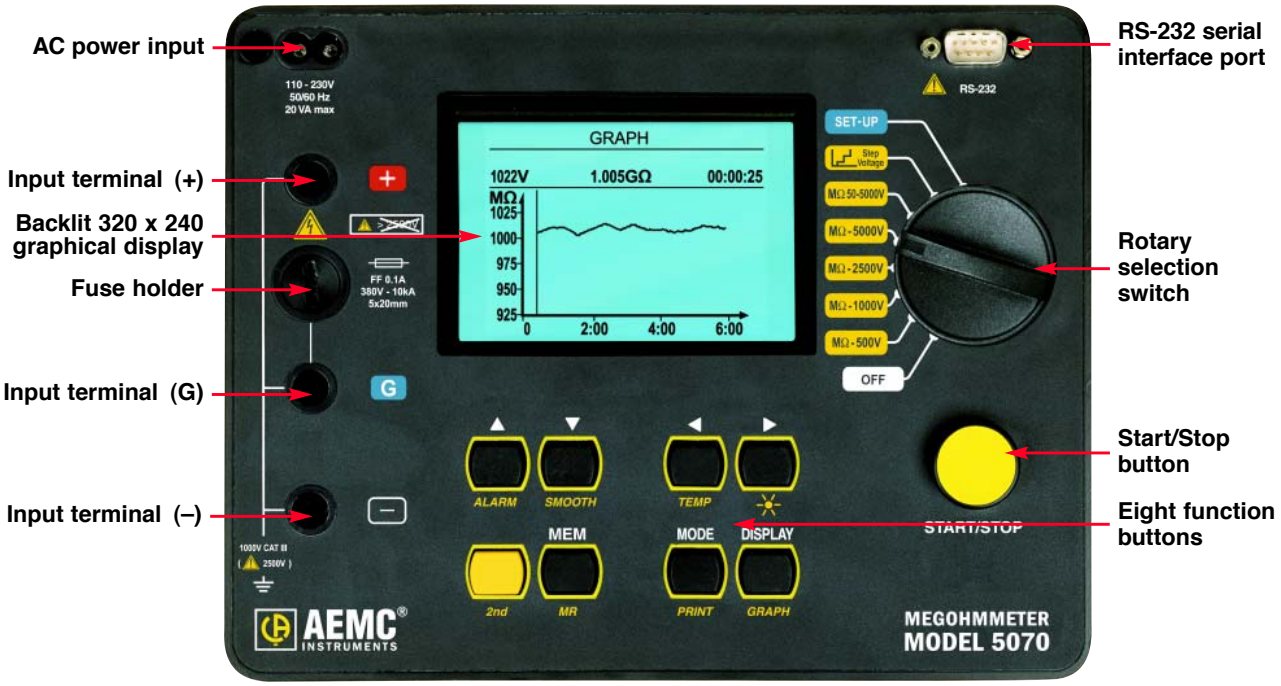
Specifications

MODEL	5070
ELECTRICAL	
INSULATION TESTS	
Test Voltage/Range 500V 1000V 2500V 5000V	30kΩ to 2000GΩ (2TΩ) 100kΩ to 4000GΩ (4TΩ) 100kΩ to 10,000GΩ (10TΩ) 300kΩ to 10,000GΩ (10TΩ)
User Selectable Test Voltage	Programmable: 40 to 1000V: 10V increments; 1000 to 5100V: 100V increments Three test voltages can be stored.
Short Circuit Current	<1.6mA ± 5%
Accuracy 1kΩ to 40GΩ 40GΩ to 10TΩ	±5% of Reading ± 3cts ±15% of Reading ± 10cts
DAR (1 min/30 sec)[1]	0.02 to 50.00
PI (10 min/1 min & user programmable)	0.02 to 50.00
DD $\left(\frac{\text{Current after 1 min}}{\text{test voltage x capacitance}}\right)$	0.02 to 50.00
Capacitance Check	0.005 to 49.99µF Max resolution 1nF
Leakage Current Measurement	0.00nA to 3mA Max resolution 1pA
Programmable Run Time R(t)	1 min to 49 hrs 59 min
Smooth Function (user selectable)	Digital filtering stabilizesdisplay readings
Automatic Step Voltage	3 profiles, each containing 5 steps programmable from 40 to 5100V. Dwell time programmable from 1 min to 10 hrs per step. Maximum total time for 5 steps is 59 hrs 59 min
Temperature Correction	Operator programmable reference temperature and device under test temperature with automatic temperature correction of resistance
Discharge After Test	Automatic
Discharge Voltage Display	Yes
Voltage Test/Safety Check	0 to 1000VAC/DC (16 to 420Hz), 1V Resolution
Voltage Warning Indicator	Yes >25V
Test Inhibition[2]	Yes >25V
Guard Terminal	Yes – adjustable from 25 to 1000V depending on test voltage range in use
DISPLAY	
Backlight	Blue, Electroluminescent
Display Size	3.75 x 3" (93 x 75mm)
Display	Graphical: 320 x 240 resolution
Power Source	Eight NiMH rechargeable batteries Line power: 85 to 256VAC (50/60Hz)
GENERAL	
Dimensions	10.63 x 9.84 x 7.09" (270 x 250 x 180mm)
Weight	9.5 lbs (4.3kg)
Protection Index	IP53
OTHER SPECIFICATIONS	
Report Print Out Direct to Printer	Yes – preset format
Storage of Readings over Time R(t)	128kB memory
Programmable Reading Intervals	5 sec to 15 min
Test Voltage Display	Yes
Elapsed Test Time Display	Yes
Real Time/Date Display	Yes
Test Voltage Lock-out	User programmed
Storage of Test Results	Stores over 1500 test results
Communication Port	RS-232
PC Software/Report Generation	Yes, DataView®Lite (included)
PC Operation of Megohmmeter	Yes
SAFETY	
Safety Rating	EN 61010-1, 1000V Cat. III
Double Insulation ⧈	Yes
CE Mark	Yes

[1] *DAR times are programmable in the Model 5070*

[2] *Inhibit voltage is selectable at 3, 10 or 20% of test voltage*

Construction



ORDERING INFORMATION	CATALOG NO.
Megohmmeter Model 5070 (Digital, with Graphical Display, Backlight, Alarm, Timer, 500V, 1000V, 2500V, 5000V, Auto DAR/PI/DD, RS-232 w/DataView®Lite Software) Includes soft accessory bag, one red, one blue and one black lead with integral 5000V rated hippo clips, one jumper lead for use with guard terminal, one 5 ft RS-232 DB9/DB25 F/F to DB9/DB25 F/F Cable for PC, rechargeable battery pack, DataView®Lite software, US 120V power cord and user manual	**Cat. #2130.30**
Accessories (Optional)	
Cable, PC RS-232. DB9 F/F 6 ft (for serial printer)	Cat. #2119.46
Leads, set of three, 5 ft color coded – rated at 1000V max (one red, one blue and one black lead; one red, one blue and one black alligator clip)	Cat. #2119.55
Leads, set of three, 10 ft color-coded rated at 5000Vmax. (one red, one blue and one black lead, one red, one blue and one black alligator clip, one black test probe, one red test probe)	Cat. #2119.76
Leads, set of three, 25 ft color-coded rated at 5000Vmax. (one red, one blue and one black lead with integral 5000V rated hippo clips)	Cat. #2119.86
Leads, set of three, 45 ft color-coded rated at 5000Vmax. (one red, one blue and one black lead with integral 5000V rated hippo clips)	Cat. #2119.87